

THE WHITE HOUSE

WASHINGTON

December 6, 1982

MEMORANDUM FOR ROBERT C. McFARLANE

FROM:

Ronald B. Frankum
RONALD B. FRANKUM

SUBJECT:

SIG(Space) Discussion of Fifth Orbiter

The NSDD-42 states that the SIG(Space) is to "provide for orderly and rapid referral of space policy issues to the President for decisions as necessary." I concur with your assessment that a commitment to a fifth shuttle orbiter in FY 1984 is an issue that is appropriate for SIG(Space) review; but I believe that the issue, as framed by the working group, is not appropriate for a Presidential decision. The issue paper would ask the President to make decisions on options about near-term production rates based upon uncertain and controversial data. I believe that the issue that the SIG(Space) should review is whether a commitment to a fifth orbiter in FY 1984 is necessary to best implement the President's policy. I suggest that the working group be asked to write such a paper. In view of the short time available, I am enclosing a draft example of an appropriately framed issue paper. I look forward to your early reply.

cc: Space SIG

Fifth Orbiter

ISSUE: Is the fifth orbiter needed to implement President Reagan's Space Policy (NSDD-42)?

Background

The President's Space Policy (NSDD-42) states:

- o The United States is fully committed to maintaining world leadership in space transportation with an STS capacity sufficient to meet appropriate national needs.
- o The STS program requires sustained commitments by each affected department or agency.
- o Major changes to the STS program capabilities will require Presidential approval.
- o The STS is the primary U.S. Government launch system.
- o The first priority of the STS program is to make the system fully operational and cost-effective in providing routine access to space.
- o The United States Government will provide a climate conducive to expanded private sector involvement in space activities, with due regard to public safety and national security.
- o Launch priority will be provided for national security missions.

Two orbiters have been delivered, one more will be delivered in late 1983, and a fourth is currently scheduled for delivery in December of 1984. A production go-ahead now would produce a fifth orbiter in 1988, at a cost estimated to be over \$2 billion plus additional facilities. A decision not to produce a fifth orbiter now will result in the further closing down of the orbiter production line.

Discussion

The function of the fifth orbiter is to provide a hedge against a complete loss of an orbiter or an unexpected short term growth in demand. Its utility, therefore, depends upon both

fleet capacity and launch service. Long term (decades) launch service demand predictions are uncertain, but it is possible to set good upper and lower bounds upon demand for the period when the fifth orbiter would begin service. Spacecraft take considerable time to develop and by far most of the demand is for U.S. Government payloads. Estimates of shuttle launch capacity during routine operation vary between six and eight flights per year per orbiter, averaged over the fleet and assuming prudent maintenance and operation procedures. "Surge" values are higher.

National security payloads have priority, and there is significant safety margin with the four-orbiter fleet for national security, even assuming the irrevocable loss of two orbiters (Tab A, Fig 1). To ensure "a climate conducive to expanded private development," the STS should give second priority to commercial users, and the expected range of demand for these services, when added to the expected national security payloads (Tab A, Fig 2) still indicates that a four-orbiter fleet is very robust. Indeed, the four orbiter fleet provides more than enough backup for all expected users (Tab A, Fig 3), except in the highly unlikely circumstance of both much greater than expected demand and lower than expected orbiter performance.

Delivery of a fifth orbiter will yield a space transportation system with a large overcapacity. This will add significantly to the cost of the system. These additional costs would most likely be passed on to the users--the national security elements, the commercial element, and the science and applications community--thereby reducing the number of payloads and perhaps forcing commercial payloads to foreign launch suppliers. (An alternative would be to subsidize the price of a shuttle launch --but this would make it impossible to develop a U.S. private sector launch service--in opposition to the President's policy.)

Further, unless additional funds are committed, purchase of a fifth orbiter now would lock the U.S. Government into a launch technology that will be over two decades old for much of the remainder of the century. This is in opposition to the President's policy of maintaining leadership in space transportation.

Conclusions

Purchase of a fifth orbiter now would produce a large overcapacity of U.S. Government launch services, resulting in a reduction of U.S. space capability and technology, and higher costs of doing both government and commercial business in space. This will reduce the utility of space to the U.S. Government and discourage private sector investment.

Options

The FY 1984 budget request includes the funding to produce and deliver a fifth orbiter. The commitment to produce and deliver a fifth orbiter will have a significant impact on the President's Space Policy.

There are two options:

1. Commit to a fifth orbiter.

PRO This option will provide an additional hedge against a catastrophic failure of several orbiters. It will demonstrate a continuity of policy that has stretched over several administrations.

CON This option will result in an overcapacity of space launch services, raising the costs of using space to all users. This will result in either larger deficits or less aggressive use of space. It will discourage private sector involvement.

2. Do not commit to a fifth orbiter but maintain adequate support for a four-orbiter fleet.

PRO This option will demonstrate that the U.S. is committed to space leadership by providing resources to the space program where they have maximum economic, scientific, and national security return. It signifies a movement away from past policies and provides maximum encouragement of private sector investment. It permits the investigation of appropriate future launch technology.

CON Will indicate a change from past policies, which, if not explained properly, can be used by detractors of the U.S. as an indication of weakening support for the space program.

Recommendation

(To be determined.)

Figure 1
National Security Demand

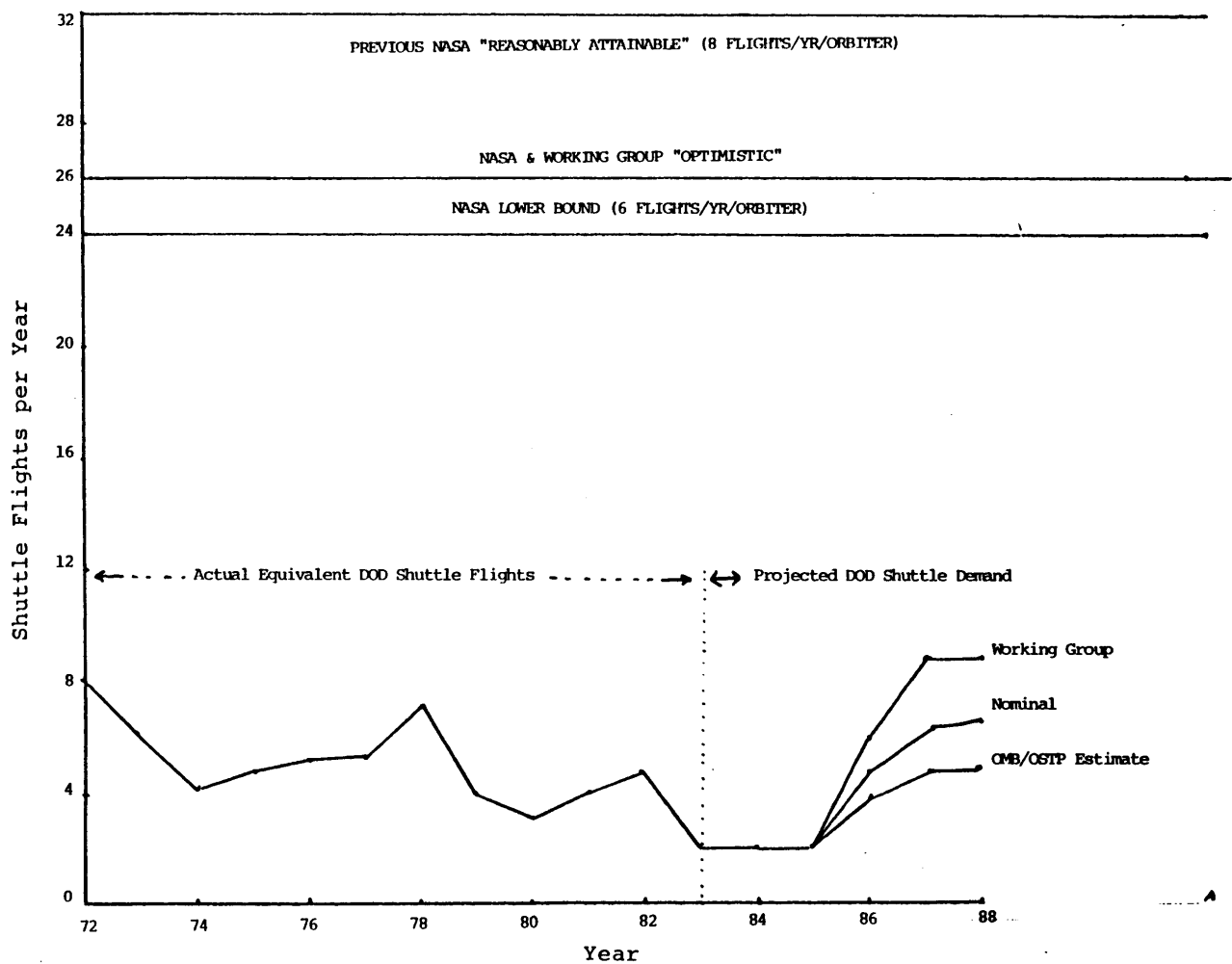


Figure 2

National Security plus Commercial and Foreign Demand

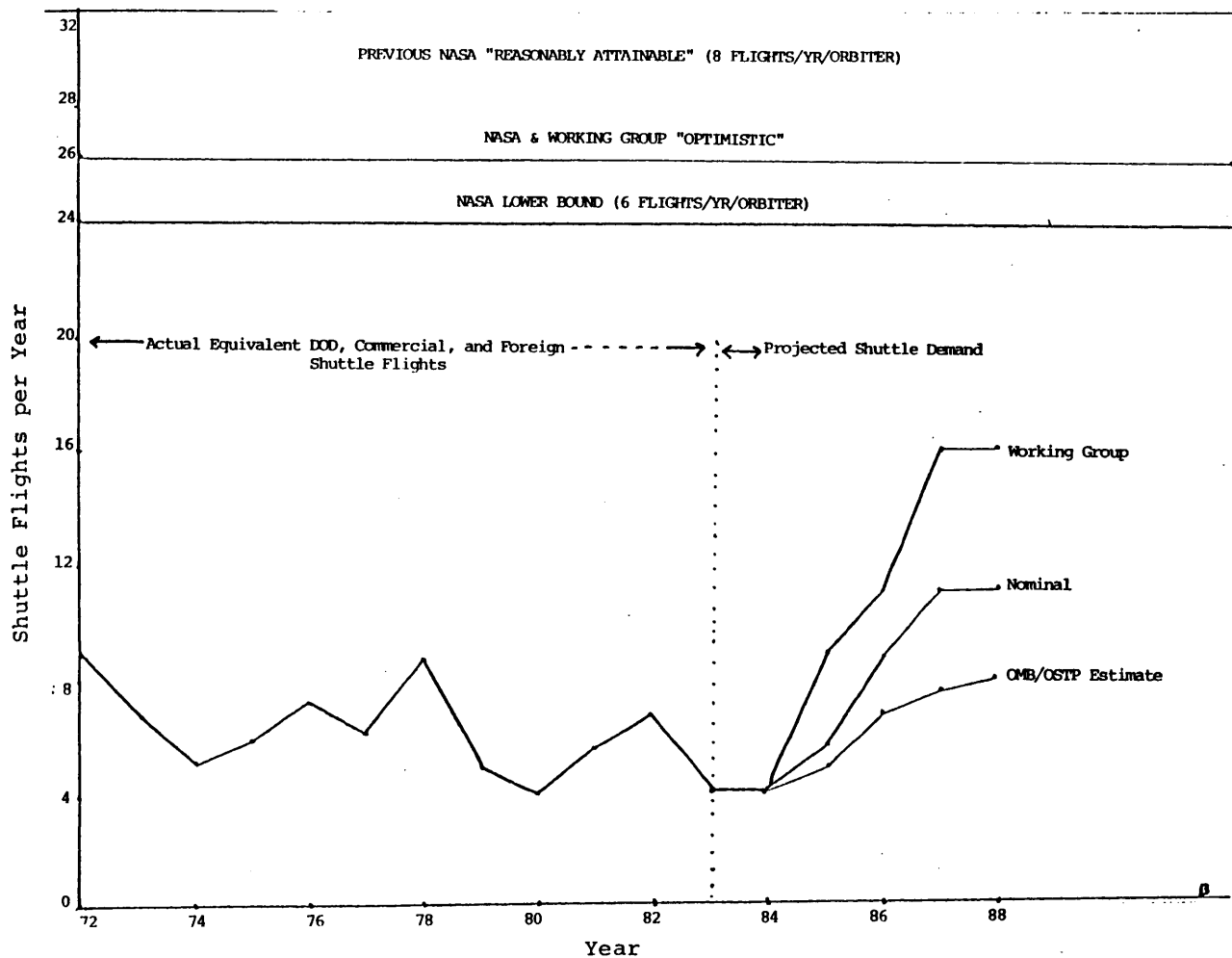


Figure 3

Total Demand--All Users

